

Addressing Urban Stormwater Issues in Caroline County, Maryland

THE **GOOD** THE **BAD**

AND THE **UGLY**

Non-Regulated Urban Stormwater LOAD (TN)	Non-Regulated Urban Stormwater TARGET (TN)	Total Reduction NEEDED (TN)
147,000 lbs	102,000 lbs	45,000 lbs

April 29, 2013
Spring WIP Regional Workshop
Easton, Maryland

Existing Conditions

- **Total County area: about 200,000 acres**
- **County drains into two 6-digit basins: Choptank River Basin and Nanticoke River Basin.**
- **Land Use: 60% ag, 35% forest, 5% developed**
- **Ten towns, total acreage: 7,485 acres, inc. 1,000 acres farmland**
- **About 1,600 acres of urban impervious development countywide**
- **About 5,400 acres of suburban/rural pervious development countywide**

POPULATION	
Denton	4,418
Federalsburg	2,739
Greensboro	1,931
Ridgley	1,639
Preston	719
Goldsboro	246
Hillsboro	161
Henderson	146
Marydel	141
Templeville	52

Existing Challenges/Opportunities

- **Federalsburg, Ridgely, Preston, and Greensboro experiencing issues related to aging SWM systems, e.g., street and property flooding, degradation of roads, and I & I of stormwater in sewer systems.**
- **Issues with agricultural drainage ditch systems (PDAs) impacting small towns.**
- **Only Denton and Federalsburg have GIS data on locations of stormwater facilities; all towns have limited DPW staffs and little or no in-house expertise on SWM systems or retrofit techniques.**
- **Low to medium density developed areas allow room for retrofits.**
- **SWM system assessments needed in most towns, good opportunity to address water quality at same time.**

Addressing Stormwater

- **2010 County w/Center for Watershed Protection, Watershed Assistance Collaborative, and MDE, developed 319 Watershed Plan for Upper Choptank Watershed to address nonpoint source pollution in County.**
- **319 Plan includes assessments of land use and development in the Upper Choptank's 70 small watersheds (12-digit).**
- **319 Plan serves as foundation of County P2 WIP urban strategies.**
- **Some cost estimates/goals in 319 Plan need to be reviewed based on new information developed as part of State's P2 WIP development.**

Addressing Stormwater

- **Identified 30 county-owned properties as potential sites for installation or retrofit of SWM BMPs**
 - **Collective drainage area of about 270 acres**
 - **Potential reduction of 1,855 lbs TN/yr**
 - **Estimated cost of \$4.6 million**
- **Identified 20 additional potential project sites in Denton and Greensboro**
 - **Collective drainage area of about 30 acres**
 - **Potential reduction of 200 lbs TN/yr**
 - **Estimated cost of \$1 million**
- **Will conduct feasibility study of critical issues of unpaved road runoff and drainage and potential BMPs**
 - **32 miles of unpaved County roads**
 - **3.6 lbs TSS/ft of road/yr = potential reduction of 304 tons TSS/yr**

Addressing Stormwater

- **Seeking grant funding for projects that will feature partnerships with CWP, WAC and towns.**
- **First MDE 319 grant funded this year, will fund retrofit projects on 3 public properties in Greensboro, and a county-wide assessment of unpaved roads.**
- **Specific Opportunities: training of county and town DPW staffs in retrofit techniques and maintenance; opportunities for local companies and labor forces; targeting projects that correct long-standing problems that have negatively impacted the community (flooding, mosquitoes, I & I, etc).**
- **Broad Opportunities: most of sites with high impervious surface percentages are highly visible public/institutional properties – good education and demonstration potential.**

Addressing Stormwater

- **Towns behind the curve on facility/hydraulics info – need to build inventory w/priority needs.**
- **Hard to find funders for SWM system assessment and inventory projects due to lack of actual reduction benefits.**
- **Relatively small nutrient reduction benefits of projects make grant proposals less competitive (the 3 projects in Greensboro will reduce a total of 8 lbs TN/yr).**
- **319 Fund has been only successful funding request.**

Addressing Stormwater - What's Ahead

- **Keep trying with NFWF, CBT and Coastal Communities funding programs.**
- **Watershed Assistance Collaborative working with town of Ridgley to find funding to incorporate regenerative techniques in solution to long-standing flooding problem at edge of town.**
- **Impacted area includes town, county and state roads, public drainage association ditch and several private properties located in town and county. Partnership jackpot!**



Assessing Data

- **County ahead of curve in GIS data on impervious areas, including primary and accessory building footprints, driveways, parking lots and roads for entire county. Working with CBP Land Use Workgroup to review differences in local and model data.**

Developed Areas	Impervious Acreage		Pervious Acreage	
	Model	County	Model	County
Urban	840	1,620	2,946	677
Suburban Residential Lots	53	624	1,298	2,931
Rural Residential Lots	1,293	199	11,240	2,399
Total	2,186	2,443	15,484	6,007

Total Reduction (TN)

45,000 lbs? or 20,000 lbs?

High Intensity Development Downtown Baltimore



↕ Same loading rate! ↕



High Intensity Development Downtown Denton

Assessing Data – What's Ahead

- **Continuing to work with CBP Land Use Workgroup in assessing local level data on locations/intensity of developed areas.**
- **Next: SWM system assessments to obtain GIS data on town and county stormwater systems, including:**
 - **Inlets**
 - **Outfalls**
 - **Pipes**
 - **Drainage areas to these features**
 - **Failures**
- **In the meantime, County creating temporary GIS database of basic SWM system info (inlet and outfall locations), starting with Greensboro.**

Assessing Costs

- **Targeted projects in Upper Choptank Watershed will reduce 2,000 lbs of TN at cost of \$5M, or \$2,500/lb TN**
- **P2 WIP non-regulated stormwater target reduction: 45,000 lbs**
- **Potential cost to meet P2 WIP target: \$112.5 M**
- **Implement projects using grant funding and in-house expertise as much as possible.**
- **Utilizing impervious area GIS data and SWM needs inventories to prioritize projects using triage-type system for maximum benefits (water quality, infrastructure, local economy).**

Assessing Costs – What’s Ahead

- **Review potential of nutrient trading between sectors within the County**
- **Establish voluntary credit banks**
- **Partnerships with neighboring counties to share costs for large-scale watershed-wide projects**
- **Towns may consider implementing stormwater utilities**

- END -

Questions?

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